

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1. (Currently Amended) A method for reliably storing and updating data blocks on a disk array, said method comprising:

writing at least one data block of said data blocks to a first disk of said disk array;
asynchronously with said writing to said first disk, storing at least one redundant data block corresponding to said at least one data block in at least one spare disk of said disk array;
maintaining a directory of updated data blocks, said updated data blocks comprising ones of said data blocks that have received a write operation and a corresponding write operation to a corresponding redundant storage block has not been made;
predicting if said first disk will fail; and
if said first disk is predicted to fail in said disk array, only updating redundant storage blocks corresponding to said updated data blocks at a time when the disk array is relatively idle, thereby reducing impact on foreground disk array performance.

2. (Previously Presented) The method according to claim 1, wherein said maintaining of said directory is based on a function.

3. (Previously Presented) The method according to claim 2, wherein said function comprises a mathematical function.

4. (Previously Presented) The method according to claim 2, wherein said function comprises an error correcting code.

5. (Previously Presented) The method according to claim 1, said maintaining of said directory comprising maintaining an address of said data blocks corresponding to a set of addresses of said redundant data blocks that require updating.

6. (Previously Presented) The method according to claim 1, wherein said disk array comprises at least one a RAID array.

7. (Previously Presented) The method according to claim 1, further comprising reconstructing data stored on a failed disk onto at least one replacement disk.

8. (Previously Presented) The method according to claim 1, wherein if an amount of said updated data blocks exceeds a fraction of said data stored in said disk array, said method further comprises only updating said redundant storage blocks corresponding to said updated data blocks.

9. (Previously Presented) The method according to claim 1, wherein whenever a load on said disk array is below a threshold value, said method further comprises only updating said redundant storage blocks corresponding to said updated data blocks.

10. (Previously Presented) The method according to claim 1, further comprising

preferentially updating redundant data blocks that are less likely to be altered again.

11. (Currently Amended) A method of reducing data loss in a disk array, said method comprising:

periodically storing redundant data into data blocks located on a spare disk;

monitoring disks in said disk array for predicted disk failures;

determining which of said data blocks comprise updated data blocks, said updated data blocks comprising ones of said data blocks that have received a write operation and a corresponding write operation to a corresponding redundant storage block has not been made; and

if a first disk is predicted to fail in said disk array, only updating redundant storage blocks corresponding to said updated data blocks of said first disk at a time when the disk array is relatively idle, thereby reducing impact on foreground disk array performance.

12. (Previously Presented) The method according to claim 11, wherein said maintaining of said directory is based on a function.

13. (Canceled).

14. (Previously Presented) The method according to claim 11, wherein said disk array comprises at least one a RAID array.

15. (Previously Presented) The method according to claim 11, further comprising

reconstructing data stored on a failed disk onto at least one replacement disk.

16. (Previously Presented) The method according to claim 11, wherein if an amount of said updated data blocks exceeds a fraction of said data stored in said disk array, said method further comprises only updating said redundant storage blocks corresponding to said updated data blocks.

17. (Previously Presented) The method according to claim 12, wherein whenever the load on the disk array is below a threshold value, said method further comprises only updating said redundant storage blocks corresponding to said updated data blocks.

18. (Previously Presented) The method according to claim 17, further comprising preferentially updating redundant data blocks that are less likely to be altered again are preferentially updated.

19. (Currently Amended) A system for reducing data loss in a disk array comprising:
a storage unit operable for periodically storing redundant data into data blocks located on a spare disk;

a monitor operable for monitoring the disks in the array for predicted disk failures;

a directory operable for determining which of said data blocks comprise updated data blocks, said updated data blocks comprising ones of said data blocks that have received a write operation and a corresponding write operation to a corresponding redundant storage block has not been made; and

a computer operable for updating only redundant storage blocks corresponding to said updated data blocks at a time when the disk array is relatively idle, thereby reducing impact on foreground disk array performance.

20. (Previously Presented) The system according to claim 19, wherein said directory is maintained based on a function.

21. (Canceled).

22. (Previously Presented) The system according to claim 19, further comprising at least one replacement disk operable for storing reconstructed data previously stored on a failed disk.

23. (Previously Presented) The system according to claim 19, wherein if an amount of said updated data blocks exceeds a fraction of said data stored in said disk array, said computer is further operable for only updating said redundant storage blocks corresponding to said updated data blocks.

24. (Previously Presented) The system according to claim 19, wherein said disk array comprises at least one a RAID array.

25. (Previously Presented) The system according to claim 19, wherein, whenever a load on said disk array is below a threshold value, said computer is further operable for only

updating said redundant storage blocks corresponding to said updated data blocks.

26. (Previously Presented) The system according to claim 25, wherein said computer preferentially updates one of said redundant data blocks that are less likely to be altered again.

27. (Canceled).